MICROFINANCE INSTITUTIONS UNDER INTEREST RATES CEILINGS

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Abstract

Microfinance institutions (MFIs) have grown fast in WAEMU surprising political decision makers. They reacted by setting up in the late 90's, a specific legislation. A legal usury rate for credits was defined fixing the borrower ceiling interest rate at 27 percent per year for microfinance institutions and 18 percent for banks. This statutory frame, fast elaborated, revealed early its incapacities and therefore, weakened structures in charge of the regulation of the sector. This structure is confronted with the difficult choice to maintain institutions outside the statutory frame or to apply a rigorous supervision and to precipitate a massive decline of MFIs. This law limits incentives to better governance, the efficiency and the flexibility expected from a good statutory frame. This paper models the behaviour of microfinance institutions in the context of interest rate ceilings and requirement of a minimal level of governance. We use comparative statics to show that a relaxation of the constraint on the usury rate does not lead necessarily to an increase of the borrower interest rate.

Key words : regulation, usury, governance, microfinance

JEL Classification : G21, G28, G38, K20

1. Introduction

The financial liberalization policies of the 80s in Africa led to the implementation of a specific legislation for microfinance institutions in the West African Economic and Monetary Union (WAEMU). This legislation and the usury law which followed put an upper limit on the interest rate of banks at 18 per cent and that of microfinance institutions at 27 per cent. The process of fixing the usury rate was often questioned and propositions of improvement sometimes suggested (Baudassé and Lavigne, 2000). In developing countries, the risk of a bad legislation can not be dismissed. The inadequate legislations reduce transactions and efficient functioning of markets (Coetzee and Goldblatt, 1998). That is true for the financial legislations and in particular for the microfinance sector in Africa, which is dominated by the informal practices. The cost of an inappropriate legislation could be socially high in this context where the products of saving are not very diversified.

The fixation of different thresholds of usury for banks and microfinance institutions supports the idea that the credit charge and the risks taken in microfinance are different from those of banks. It is not only a question of guaranteeing the efficiency of the microfinance market but also to set up a protection against high interest rates. We find this idea from the scholasticism for whom, little lenders could become a powerful oligopoly which fixes high interest rates allowing an overexploitation of the borrowers

in case of insufficient competition (Baudassé and Lavigne, 2000). This idea of protection appears also with Glaeser and Scheinkman (1998) for whom, an usury law which restricts the level of interest rates plays a role of social insurance by imposing a transfer of income from the lenders to the borrowers because marginal utility of capital is stronger with the laters than the firsts who are in a situation of abundance. But for Adam Smith, setting up a threshold of usury helps solving problems of anti-selection, the lenders will probably being attracted by high interest rates offered by adventurers at all do not worried about a fund repayment (Baudassé and Lavigne, 2000; Diatkine, 2002).

On the other hand, the argument of efficiency in favour of an interest rate ceiling is that the lenders face a legal ceiling will try to minimize the costs of credit to maximize their profit margin. The liberal economists think that imposing a threshold of usury reduces the possibility of reaching Pareto's optimum where lender and borrowers can not any more, one and\or the other one, under certain conditions, improve their satisfaction. The suspension of loan beyond the usury interest rate reduces not only the satisfaction of the lender but also that of the borrower who was ready to pay this price but sees itself speechless of an usury loan, without as far as one other loan at better rate is offered to him (Baudassé and Lavigne, op. cit.). But these arguments on the efficiency ignore the weakness of the State of law in the countries where rule on usury law can be circumvented without outlawyers are neither discovered nor punished by the regulator. What

useful is a regulation on usury in this areas and what would be the behaviour of microfinance institutions in front of its respect, given that the good governance has a cost? What would be the cost of governance supported when respecting the legislation, which would avoid an attempt of distortion of the usury law? Is it possible to find a threshold of usury compatible with a level of governance which would incentive to conform to legal rate? This paper analyzed the behaviour of microfinance institutions under the legal threshold of usury and impacts in terms of costs for MFIs on governance and interest rates. This paper joins in the continuance of preliminary works on the level of global actual microfinance interest rate exceeding the legal threshold of usury prescribes by the law. The rest of the paper is organized as follows. The second section presented the fundamental principles of a good rule and noticed as they are not gathered for the microfinance in the WAEMU. Section three developed a cost-benefit analysis which helps to determine the conditions of respect for the statutory frame by the microfinance institution. This model is based on the classic objective of profit maximisation for microfinance institutions. The fourth section was dedicated to the statics comparative analysis. Section five presents the policy implications and the latest discusses about concluding remarks.

2. Regulation principles

To make a success of microfinance legislation, five principles are required as objectives (Staschen, 1999; Valenzuela and Young, 1999; Fiebig, 2001). These are the promotion of a neutral competition, the promotion of

efficiency, the promotion of a structure of incentive governance, flexibility of the law and finally the guarantee of a positive cost - profit perspective for institutions which conform to the law.

A neutral and equitable competition has to be the objective of the law. No particular measure has to induce a distortion in the competition between the financial institutions. The efficiency of microfinance institutions supposes an effective framework statutory. Regulation means to set up a law and keep institutions remain within it. Regulation has to assure an allocative efficiency, operational and dynamic efficiency (Fiebig, 2001). Allocative efficiency consists in an optimal combination in use of financial resources. Operational efficiency is a capacity to minimize the costs of transactions in the financial intermediation whereas dynamic efficiency means the capacity of adaptation for financial institutions to the changes in their environment. These principles of efficiency, eventually, maximize the profit the institution. Staschen (1999), thinks that the first drawbacks of regulation is to restrict dynamic efficiency of microfinance institutions, notably when the risk of an inappropriate legislation is particularly high. Appropriate legislation promotes incentive governance. This third principle refers to the mechanisms through which, donors, shareholders and other investors make sure that funds will be used in best ways (Hartarska, on 2005). It is the mechanism which insures a maximal efficiency of investments. This mechanism is important because of the difference of preferences and objectives among managers and investors (Shleifer and Vishny, 1997). In microfinance, the application of the internal rules of

foreseen functioning and organization with a legal frame aims actors to a full use of capacities to increase through the community interest, their own interest or vice versa. The Fourth principle is flexibility. The legal framework of the financial institutions has to be rather flexible and evolutive to allow technological innovation, free entry and exit, … Finally, when legislation bypassing is possible, legal rules have to be subjected to an analysis cost - profit. In the countries where supervision is particularly difficult, this last principle is decisive in the microfinance institutions choice for respecting legal framework (Ouattara, 2003; Lanha, 2006).

In the case of the microfinance specific law in WAEMU, observations seem that these principles are not gathered. One can see current works among WAEMU countries for the revision of this legal microfinance framework (Tanimoune, 2003, Lanha, op. cit.). This justifies the examination of microfinance behaviour in this context.

3. Basic model

The basic model is inspired from McIntosh et Wydick (2004) processes which start from a classic profit-function to model MFIs behaviour.

3.1 Analytical framework

Consider a microfinance institution behaving as profit-maximizer, operating in large pool of borrowers, under microfinance legislation. Let define by:

- R, the net income of MFI ; ;
- i, the interest rate on loan (borrower or debtor interest rate) ;
- $\overline{i}$, the legal debtor interest threshold or usury ;
- t, credit interest rate on local mobilized resources ;
- θ , the unit cost supported on external mobilized resources ;
- g, the value of governance indicator for the MFI. This value can be approached by the index of notation obtained from the consensus group composed of microfinance rating agencies, donors, multilateral banks and private voluntary organizations agreed in 2003 to some guidelines on definitions of financial terms, ratios and adjustments for microfinance. Such ratios are CAMEL, PEARLS from WOCCU and GIRAFE from PlanetFinance (see annex) ;
- $\overline{g}$, standard index in good governance. This level of governance is necessary and due for quite MFI approved or which desires to be approved officially. $\overline{g}$ is imposed by the legislator and the regulator insures its supervision;

- c, the marginal cost of governance. It depends on the size of credit, number of accounts and the degree of decentralization/transparency. But in short run, it is supposed fixed;
- cg, is the corresponding cost associated to the level of governance of MFI;
- J and E indicate respectively specific and environment characteristics which can influence the mobilization resources and lending MFI's behaviours;
- a, the effort of MFI's governance. a is observable to the MFI and the regulator. a aims at two objectives: respect the threshold of usury and improve the practices of governance;
- $\omega(a)$, is defined as a function of supervision measuring the respect of the usury threshold for the MFI. $\omega(a)$ is measured by the regulator but is observable to the MFI. This function is defined between 0 and 1 going from nearly-non-existent supervision (corresponding in no effort to respect the ceiling of usury) to a perfect supervision: $0 \le \omega(a) \le 1$ with $\omega'(a) > 0$. It is a sort of rating which rewards effort (a) to conform to the usury threshold. There is a penalty associated to the non compliance with the threshold of usury. This penalty is defined according to the size of usury loan (see assumption 1);
- $\tau(a)$, is defined as a function of supervision measuring the respect of governance rules for the MFI. $\tau(a)$ is measured by the regulator but is observable to the MFI. This function is defined between 0 and 1 going from nearly-non-existent governance effort to a total effort (respectively to perfect supervision) : $0 \le \tau(a) \le 1$ et $\tau'(a) > 0$. The nature of the supervision

determines the effort of improvement in good governance practices. Here again, a penalty is associated to the non compliance with the MFI's governance practices. This penalty is defined according to the local mobilized resources (assumption 2);

- P (i, J, E) is defined as a function of loan. It depends on the interest rate (i), specific (J) and environment (E) characteristics of MFI ;
- M_l (t, J, E) is defined as a function of local resources mobilization. This mobilization of lending capital depends on the offered saving rate (t), specific (J) and environment (E) characteristics of MFI ;
- M_e (g, X, E) is defined as the external resources mobilization function. It depends on the level governance observed for MFI (g), external environment characteristics (X) and internal environment characteristics (E);
- K (P, M_l, M_e) is defined as a cost function, others than interest costs. It includes administrative costs for P, resources mobilization costs for M_l and M_e. There is a cost associated to each of three operations with : $\frac{\partial K}{\partial P} > 0$, $\frac{\partial K}{\partial M_l} > 0$ and $\frac{\partial K}{\partial M_e} > 0$.

Assumption 1 : *Penalty on usury rate default*

There is a penalty associated to the non compliance with the legal threshold of usury. It is modelled as a multiplying term of the effort of respect supervision, the quantity of usury loan offered and of the distance with

regard to threshold of usury. This penalty is zero for the MFIs which respect the threshold of usury. The expression is:

$$\begin{cases} \omega(a)P(i)(i-\bar{i}) & \text{if non compliance with threshold of usury} \\ 0 & \text{if MFI respects threshold of usury} \end{cases}$$

Assumption 2 : *Penalty on best governance default*

There is also a penalty associated to the non compliance with governance rules imposed by the law. It is modelled as multiplying term of the effort of supervision, the quantity of local mobilized resources and the gap from the level of governance observed to the standard level of good governance. That is : $\tau(a)\left[M_l(t,J,E)\right](\bar{g}-g)$. The penalty is zero for the MFIs which conform to the standard governance rules.

Assumption 3 : *Microfinance deposit environment*

The function of profit supposes that the mobilization of local resources (M_l) is independent from the governance whereas the mobilization of external resources (Me) is independent from the lending interest rate. In facts, the small depositors, often illiterate and little equipped for the control of the management, are little interested in the governance, so as the MFI has had a repayment problem or bad governance one in the past. As for the donors, (Local government or foreign donors) who pursue social objectives through oriented funds, they are requiring best governance practices.

In summary, the variables and parameters of control are for the regulator $\bar{i}$, $\bar{g}$, $\omega(a)$ and $\tau(a)$; a and δ for MFI. δ is the ratio of the local resources transformation into loan. Endogenous parameters are i, t and g. c and θ are exogenous parameters. θ is an external parameter. Under these hypotheses, the following section presents the program of maximization of the MFI profit.

3.2 The MFI as profit-maximizer

The net income of the MFI is written as :

$$R = iP(i,J,E) - tM_l(t,J,E) - \theta M_e(g,X,E) - cg - K(P,M_l,M_e) - \omega(a)P(i)(i-\bar{i}) - \tau(a)\left[M_l(t,J,E)\right](\bar{g}-g) \quad (1)$$

This function of income contains seven constituents, three news which are not defined namely :

- $iP(i,J,E)$, the gross income from the loans with $\frac{\partial P}{\partial i} < 0$;
- $tM_l(t,J,E)$, the cost being due to the local resources mobilization with $\frac{\partial M_l}{\partial t} > 0$;
- $\theta M_e(g,X,E)$, the costs of external mobilized resources mobilized with θ as unit cost. These costs integrate interests, audits intended for the donors, the imported inflation, the exchange cost, with $\frac{\partial M_e}{\partial g} > 0$.

The program of maximization of the MFI is the following one: [1] :

$$\begin{cases} \underset{(i,t,g)}{Max} \quad R = iT(i) - tM_l(t) - \theta M_e(g) - cg - K(P,M_l,M_e) - \omega(a)P(i)(i-\bar{i}) \\ \qquad\qquad - \tau(a)\left[M_l(t)\right](\bar{g}-g) \\ \text{subject to :} \\ \delta M_l(t) + M_e(g) \geq P(i) \end{cases} \quad (2)$$

The variables J, E and X are omitted for reason of simplification. δ is the proportion of local resources transformed into loan. This parameter

[1] The assumption of credit fungibility allows us not to separate external resources from local ones in the lending process.

depends on the maximum fixed by the law and of the necessity for MFIs to keep liquid assets to satisfy the demands of withdrawal of the clients. For a given value of δ, the constraint has to be saturated in the optimal solution because resources have an opportunity cost.

The Lagrangian of the program (2) is given by the expression:

$$L(i,t,g,\lambda) = iP(i) - tM_l(t) - \theta M_e(g) - cg - K(P,M_l,M_e) - \omega(a)P(i)(i-\bar{i}) - \tau(a)M_l(t)(\bar{g}-g) + \lambda\left[\delta M_l(t) + M_e(g) - P(i)\right] \quad (3)$$

λ is the multiplier of the constraint

The first-order conditions of maximization are :

$$\frac{\partial L}{\partial i} = P(i) + i\frac{\partial P}{\partial i} - \frac{\partial K}{\partial P}\frac{\partial P}{\partial i} - \omega(a)P(i) - \omega(a)\frac{\partial P}{\partial i}(i-\bar{i}) - \lambda\frac{\partial P}{\partial i} = 0 \quad (3a)$$

$$\frac{\partial L}{\partial t} = -M_l - t\frac{\partial M_l}{\partial t} - \frac{\partial K}{\partial M_l}\frac{\partial M_l}{\partial t} - \tau(a)\frac{\partial M_l}{\partial t}(\bar{g}-g) + \lambda\delta\frac{\partial M_l}{\partial t} = 0 \quad (3b)$$

$$\frac{\partial L}{\partial g} = -\theta\frac{\partial M_e}{\partial g} - c - \frac{\partial K}{\partial M_e}\frac{\partial M_e}{\partial g} + \tau(a)M_l + \lambda\frac{\partial M_e}{\partial g} = 0 \quad (3c)$$

$$\frac{\partial L}{\partial \lambda} = \delta M_l + M_e - P = 0 \quad (3d)$$

Expression (3c) gives the quality of governance needed by the MFI. The second derivative of (3c) with respect to g gives :

$$\frac{\partial^2 L}{\partial g^2} = -\theta\frac{\partial^2 M_e}{\partial g^2} - \frac{\partial^2 K}{\partial M_e{}^2}\left(\frac{\partial M_e}{\partial g}\right)^2 - \frac{\partial K}{\partial M_e}\frac{\partial 2M_e}{\partial g^2} + \lambda\frac{\partial^2 M_e}{\partial g^2} \quad (4)$$

$$\frac{\partial^2 L}{\partial g^2} = \left[-\theta+\lambda\right]\frac{\partial^2 M_e}{\partial g^2} - \frac{\partial^2 K}{\partial M_e{}^2}\left(\frac{\partial M_e}{\partial g}\right)^2 - \frac{\partial K}{\partial M_e}\frac{\partial 2M_e}{\partial g^2} \quad (5)$$

For analytical tractability, we assume K to be linear in Me, M_l and P. Then we have : $\frac{\partial^2 K}{\partial M_e{}^2} = 0$ and in consequence :

$$\frac{\partial^2 L}{\partial g^2} = \left[-\theta + \lambda\right]\frac{\partial^2 M_e}{\partial g^2} \qquad (6)$$

From equation (3c), we then write the equality:

$$\left[-\theta + \lambda\right]\frac{\partial M_e}{\partial g} = c + \frac{\partial K}{\partial M_e}\frac{\partial M_e}{\partial g} - \tau(a)M_l \qquad \text{and} \qquad (7)$$

$\left[-\theta + \lambda\right]\frac{\partial M_e}{\partial g} = c - \tau(a)M_l$, K is assumed to be linear in Me (8)

The sign of the expression in right of equation (8) depends strictly on the supervision effort of governance rules. If the supervision effort is sufficiently strong, the quantity in right of equation (8) would be negative. In this case, the condition that $\frac{\partial Me}{\partial g} > 0$,

We have : $-\theta + \lambda < 0$.

This inequality means that the multiplier (or the 'virtual' value of external resources), λ is less than the cost of external resources (θ). With the plausible condition that $\frac{\partial^2 M_e}{\partial g^2} < 0$, the expression (6) is positive.

Rational choice for MFI managers is to respect continuously governance rules in the specific law of MFI whatever are their cost.

If supervision effort aims towards 0, the right quantity of the expression (8) has the positive sign, which c sign. We then have $-\theta + \lambda > 0$. In this case, the value of the multiplier (value of external resource) λ, is highier than their cost (θ). The sign of the quantity (6) will be negative. In this order and using equation (3c), the MFI will respect the governance rules if :

$$\left[-\theta + \lambda\right]\frac{\partial M_e}{\partial g} - c + \tau(a)M_l\Big|_{g=\bar{g}} > 0 \qquad (9)$$

rewritten as :

$$\underbrace{\lambda\frac{\partial M_e}{\partial g}}_{\alpha 1} + \underbrace{\tau(a)M_l}_{\alpha 2}\Bigg|_{g=\bar{g}} > \underbrace{\theta\frac{\partial M_e}{\partial g}}_{\alpha 3}\Bigg|_{g=\bar{g}} + \underbrace{c}_{\alpha 4} \qquad (10)$$

Equation (10) indicates that for $g = \bar{g}$, the MFI conforms to the governance rules if the marginal benefit derived from the relaxation of the constraint on external resources ($\alpha 1$) and avoidance of penalties ($\alpha 2$) are higher than marginal cost of external mobilized resources ($\alpha 3$) and marginal cost of governance ($\alpha 4$). Out of this condition, there is no incentive to follow standard governance rules.

Remember equation (10) is evaluated at point $g = \bar{g}$, we can rewrite this as follow :

$$z^* = \lambda \frac{\partial M_e}{\partial g} + \tau(a) M_l - \theta \frac{\partial M_e}{\partial g} - c > 0 \qquad (11)$$

z^* is the net value of conforming MFI to the standard governance rules. This is possible if z^* is strictly positive.

From this maximization model, we may be interested in questions as : how endogenous variables like lending and saving interest rates and the level of governance react to the parameters controlled by the legislator or regulator, such as the marginal cost of governance (c), the threshold of usury ($\bar{i}$), the standard level of governance ($\bar{g}$), … In the next section, some interesting comparative statics analysis are developed.

4. Comparative Statics

The Lagrangian of the program (equation 3) is given by :

$$L(i,t,g,\lambda) = iP(i) - tM_l(t) - \theta M_e(g) - cg - K(P, M_l, M_e) - \omega(a)P(i)(i - \bar{i}) - \tau(a)M_l(t)(\bar{g} - g) + \lambda\left[\delta M_l(t) + M_e(g) - P(i)\right] \quad (12)$$

The first order-conditions are replied as :

$$\frac{\partial L}{\partial i} = P(i) + i\frac{\partial P}{\partial i} - \frac{\partial K}{\partial P}\frac{\partial P}{\partial i} - \omega(a)P(i) - \omega(a)\frac{\partial P}{\partial i}(i - \bar{i}) - \lambda\frac{\partial P}{\partial i} = 0 \quad (12a)$$

$$\frac{\partial L}{\partial t} = -M_l - t\frac{\partial M_l}{\partial t} - \frac{\partial K}{\partial M_l}\frac{\partial M_l}{\partial t} - \tau(a)\frac{\partial M_l}{\partial t}(\bar{g} - g) + \lambda\delta\frac{\partial M_l}{\partial t} = 0 \quad (12b)$$

$$\frac{\partial L}{\partial g} = -\theta\frac{\partial M_e}{\partial g} - c - \frac{\partial K}{\partial M_e}\frac{\partial M_e}{\partial g} + \tau(a)M_l + \lambda\frac{\partial M_e}{\partial g} = 0 \quad (12c)$$

$$\frac{\partial L}{\partial \lambda} = \delta M_l + M_e - P = 0 \quad (12d)$$

Remember that K is linear in Me, M_l, P. we assume also that :

$$\frac{\partial^2 M(t,g)}{\partial g \partial t} = \frac{\partial^2 M(t,g)}{\partial t \partial g} = 0,$$

We totally differentiate each part of equation (12) to obtain (13; 14; 15 and 16) :

$$d\left(\frac{\partial L}{\partial i}\right) = \frac{\partial P}{\partial i}di + i\frac{\partial^2 P}{\partial i^2}di - \omega'(a)Pda - \omega(a)\frac{\partial P}{\partial i}di - \omega'(a)(i - \bar{i})\frac{\partial P}{\partial i}da + \omega(a)\frac{\partial P}{\partial i}d\bar{i} - \omega(a)\frac{\partial P}{\partial i}di - \omega(a)(i - \bar{i})\frac{\partial^2 P}{\partial i^2}di - \frac{\partial P}{\partial i}d\lambda - \lambda\frac{\partial^2 P}{\partial i^2}di = 0 \quad (13)$$

$$d\left(\frac{\partial L}{\partial t}\right) = -\frac{\partial M_l}{\partial t}dt - t\frac{\partial^2 M_l}{\partial t^2}dt - \tau'(a)\frac{\partial M_l}{\partial t}(\bar{g} - g)da - \tau(a)\frac{\partial^2 M_l}{\partial t^2}(\bar{g} - g)dt + \tau(a)\frac{\partial M_l}{\partial t}dg - \tau(a)\frac{\partial M_l}{\partial t}d\bar{g} + \delta\frac{\partial M_l}{\partial t}d\lambda + \lambda\frac{\partial M_l}{\partial t}d\delta + \lambda\delta\frac{\partial^2 M_l}{\partial t^2}dt = 0 \quad (14)$$

$$d\left(\frac{\partial L}{\partial g}\right) = -\frac{\partial M_e}{\partial g}d\theta - \theta\frac{\partial^2 M_e}{\partial g^2}dg - dc + \tau'(a)M_l da + \tau(a)\frac{\partial M_l}{\partial t}dt + \frac{\partial M_e}{\partial g}d\lambda + \lambda\frac{\partial^2 M_e}{\partial g^2}dg = 0 \quad (15)$$

$$d\left(\frac{\partial L}{\partial \lambda}\right) = \delta\frac{\partial M_l}{\partial t}dt + M_l d\delta + \frac{\partial M_e}{\partial g}dg - \frac{\partial P}{\partial i}di = 0 \quad (16)$$

Done with a matrix, the block of the four equations are rewritten as follow :

$$\begin{bmatrix} [1-2\omega(a)]\frac{\partial P}{\partial i}+ & & & \\ [i-\omega(a)(i-\bar{i})-\lambda]\frac{\partial^2 P}{\partial i^2} & 0 & 0 & -\frac{\partial P}{\partial i} \\ & -\frac{\partial M_1}{\partial t}+ & & \\ 0 & [\lambda\delta - t - & \tau(a)\frac{\partial M_l}{\partial t} & \delta\frac{\partial M_1}{\partial t} \\ & \tau(a)(\bar{g}-g)]\frac{\partial^2 M_1}{\partial t^2} & & \\ & & 2\beta(a)\frac{\partial M(t,g)}{\partial g} & \\ 0 & \tau(a)\frac{\partial M_l}{\partial t} & [-\theta+\lambda]\frac{\partial^2 M_e}{\partial g^2} & \frac{\partial M_e}{\partial g} \\ -\frac{\partial P}{\partial i} & \delta\frac{\partial M_1}{\partial t} & \frac{\partial M_e}{\partial g} & 0 \end{bmatrix} \times \begin{bmatrix} di \\ dt \\ dg \\ d\lambda \end{bmatrix} = \begin{bmatrix} [\omega'(a)P+\omega'(a)(i-\bar{i})\frac{\partial P}{\partial i}]da \\ -\omega(a)\frac{\partial P}{\partial i}d\bar{i} \\ \tau'(a)\frac{\partial M_l}{\partial t}(\bar{g}-g)da \\ +\tau(a)\frac{\partial M_l}{\partial t}d\bar{g} \\ -\lambda\frac{\partial M_1}{\partial t}d\delta \\ \frac{\partial Me}{\partial g}d\theta + dc \\ -\tau(a)M_l da \\ -M_1 d\delta \end{bmatrix}$$

The comparative statics is compiled to identify the signs of di, dt, dg and $d\lambda$ under certain conditions. The sign of $d\lambda$ is not important for the analysis.

For illustration, consider the case where $da \neq 0$ et $dc = d\bar{i} = d\bar{g} = d\delta = d\theta$.

Written with a matrix, we have :

$$\begin{bmatrix} [1-2\omega(a)]\frac{\partial P}{\partial i}+ & & & \\ [i-\omega(a)(i-\bar{i})-\lambda]\frac{\partial^2 P}{\partial i^2} & 0 & 0 & -\frac{\partial P}{\partial i} \\ & -\frac{\partial M_1}{\partial t}+ & & \\ 0 & [\lambda\delta - t - & \tau(a)\frac{\partial M_l}{\partial t} & \delta\frac{\partial M_1}{\partial t} \\ & \tau(a)(\bar{g}-g)]\frac{\partial^2 M_1}{\partial t^2} & & \\ & & 2\beta(a)\frac{\partial M(t,g)}{\partial g} & \\ 0 & \tau(a)\frac{\partial M_l}{\partial t} & [-\theta+\lambda]\frac{\partial^2 M_e}{\partial g^2} & \frac{\partial M_e}{\partial g} \\ -\frac{\partial P}{\partial i} & \delta\frac{\partial M_1}{\partial t} & \frac{\partial M_e}{\partial g} & 0 \end{bmatrix} \times \begin{bmatrix} \frac{di}{da} \\ \frac{dt}{da} \\ \frac{dg}{da} \\ \frac{d\lambda}{da} \end{bmatrix} = \begin{bmatrix} [\omega'(a)P+\omega'(a)(i-\bar{i})\frac{\partial P}{\partial i}] \\ \tau'(a)\frac{\partial M_l}{\partial t}(\bar{g}-g) \\ -\tau(a)M_l \\ 0 \end{bmatrix}$$

To obtain the signs of the slope (or variation ratios) di/da, dt/da et dg/da, we use CRAMER determinant computing method without forgetting that the principal determinant H < 0. The others signs are derived by the same way.

The results of comparative statics analysis derived from the block of the four equations are presented in the following section.

5. Policy implications

Table 1 presents the signs derived from the comparative statics.

Tableau 1 : Signs derived from comparative statics analysis

Parameters/variables	Loan interest rate (i)	Saving interest rate (t)	Level of governance (g)
Marginal cost of governance (c)	+	+	-
Threshold of usury ($\overline{i}$)	-	+	+
Threshold of governance ($\overline{g}$)	+	-	+
Supervision effort (a)	?	?	+
Ratio of transformation saving into loan (δ)	-	?	-
Interest rate on external resources (θ)	+	+	-

+ = positive effect; - = negative effect ; ? = undetermined effect.

Source: Results from comparative statics

Theoretical results show that a high cost of governance corresponds to high loan and saving interest rates associated to a weak level of governance. A decline in the threshold of usury raises loan interest rate, decreases the saving rate and deteriorates the quality of governance. A strict respect of governance standard rules bringing rapidly MFIs at the threshold of usury , raises loan interest rate and the quality of governance but deteriorates the saving interest rate. A good supervision through the perfect appreciation of governance effort improves the quality of governance but produces an undetermined effect on interest rates. A relaxation of the constraint on the ratio of transforming (δ) local resources into loans lowers down the loan interest rate and the quality of governance but has an undetermined effect on the saving interest rate. Finally, an increase in the cost of external resources raises the loan and saving interest rates but damages the quality of governance.

In the other hand, comparative statics suggest a paradox. It is about the impact of the threshold of usury on the interest rate. An increase in the

threshold of usury would lead MFI to reduce the loan interest rate and increase the saving interest rate with a good quality of governance. On the contrary, a lower threshold of usury can increase the loan interest rate and decreases the quality of governance. This result suggests that a strict loan interest rate ceiling would damage the local resources mobilization and the quality of governance of MFIs. It seems that what one gains by respecting the threshold of usury (penalty concerning the total amount of loans) and by improving the level of governance (penalty on local resources mobilized) while increasing the amount of loans is higher than one to lose by decreasing loan interest rate and increasing saving rate while improving the level of governance. The simultaneous increase in saving interest rate and the quality of governance is coherent because it allows a sufficient mobilization of resources to answer the expansion of the credit.

Another interesting result suggested by the basic model is that a better supervision leading to the increase of in the governance effort (a) has an unsure effect on the loan interest rate. In facts, MFIs fix their lending rate independently of standards dictated with the legislation. Empirical literature through several works, supported this behaviour which outlaws the legal rate (Wright and Alamgir, 2004; CGAP, 2004; Ouattarra, 2003; Montalieu, 2002; Baudassé and Lavigne, 2000).

6. Concluding Remarks

This paper showed that under a regime of interest rate ceiling with a standard requirement of best practices in governance, microfinance institutions can maximize their profit according to the effectiveness of the supervision of the regulator. We use a basic model to show that that the effort of supervision determines MFIs to improve their efforts of governance but effects on interest rates remain unsure. A too strict respect in the rules of governance leads rapidly MFIs to the standard required, raises lending interest rate and the level of governance but deteriorates saving interest rate. A good supervision through a perfect appreciation of the observable effort of governance improves the quality of governance, but produces an unsure effect on the interest rate. If the threshold of usury is relaxed, lending interest rate will decrease. This means that the conditions of a perfect competition are gathered to limit oligopolistic power of some microfinance institutions.

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Notes

CAMEL: Capital Adequacy, Asset quality, Management Ability, Earnings and Liquidity

PEARLS : Protection, Earnings, Asset quality, Rates of return and Cost, Liquidity and Signs of Growth dé veloppée pour les coopératives par le (WOCCU)

WOCCU: World Council for Credit Unions

GIRAFE : Gouvernance et processus de décision, Information et outils de gestion, analyse et contrôle des Risques, Activités et portefeuille de prêts, Financement, Efficacité et profitabilité de PlaNet Finance